WATERFOWL MANAGEMENT PLAN

Nova Scotia

Environment Canada
Canadian Wildlife Service

Environnement Canada
Service canadien de la faune

Nova Scotia
Lands and Forests
Wildlife Division

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NOVA SCOTIA

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Ministère des Terres et Forêts
de la Nouvelle-Écosse
Division de la Faune

In 1986, the North American Waterfowl Management Plan was signed by the Minister of the Environment for Canada and the Secretary of the Interior for the United States.

The plan sets out several guiding principles to ensure conservation of our waterfowl populations. Key among these is the central theme that protection of waterfowl and its habitat requires long term planning and close coordination of management activities between various jurisdictions. Accordingly, the Canadian Wildlife Service and the Nova Scotia Wildlife Division have cooperated to produce this provincial waterfowl management plan.

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Introduction

Waterfowl are an important natural resource for Nova Scotians - as they are for all North Americans. They are an important gamebird group and are a highly visible element of the Nova Scotia scene. Waterfowl generally nest and raise their young in northern areas, migrating to more favourable southern areas to spend the winter. Each of the 31 species of ducks and geese that regularly occurs in Nova Scotia is unique in its biology, distribution and movements. They represent an important natural resource which should be conserved and enhanced through sound management, affording both protection and use.

Nova Scotia has many sites where substantial numbers of ducks and geese congregate during spring and fall migrations. During the summer nesting and brood-rearing period, most duck species are widely dispersed, on ponds, rivers and marshes throughout the province. Only the Common Eider nests colonially, on off-shore islands. During winter, open waters around the coasts of Nova Scotia support the highest populations of Canada Geese, Black Ducks, and Goldeneyes in Atlantic Canada. Nearshore areas are frequented by numerous seaducks, principally eiders and Oldsquaws.

Waterfowl provide direct social and economic benefits to Nova Scotians. Migratory Game Bird Hunting Permit sales have varied between 11,000 and 16,000 over the last decade. A survey on the value of wildlife to Canadians (Federal-Provincial Task Force for the 1987 National Survey on the Importance of Wildlife to Canadians 1989) indicated that the direct expenditures in Nova Scotia related to waterfowl hunting alone amounted to approximately $15 million in 1987. Total expenditures on hunting amounted to $50 million. Non-hunting activities related to all wildlife, such as bird-watching and animal photography, contributed even more to the Nova Scotia economy ($56 million), bringing the total contribution to more than $106 million annually.

Waterfowl populations are managed within the framework of the Convention for the Protection of Migratory Birds which was signed for Canada and the United States in 1916. This treaty recognizes that migratory birds, and particularly waterfowl, cannot be conserved and managed without the co-operative efforts of all provincial, state, and federal governments through whose jurisdictions they move. The treaty focussed on harvest regulation because "market hunting" and "egging" were principal concerns in the early 1900s. Waterfowl species, including the Common Eider and the Wood Duck in eastern North America, had reached low numbers. Market hunting and egging were prohibited under the Act and regulations, which have controlled the legal take to a point where harvest is seldom implicated when a species is found to be in difficulty.

Despite the successes in migratory bird conservation achieved under the Convention, concern still exists regarding some species. Although harvest regulation continues to be an important element in the management of waterfowl populations, the focus of management agencies has gradually and increasingly shifted to the quantity and quality of the habitat which sustains a wide variety of wildlife species throughout their life cycles. The availability and

distribution of good quality habitat is basic to any wildlife management strategy.

In Nova Scotia, pressures of habitat alteration are not so obvious as in some other regions but are nonetheless important. The drainage of wetlands important to waterfowl was at its peak in the 19th and early 20th centuries when coastal marshes were dyked, and agricultural lands created out of forest and marsh. An estimated 58% of the coastal marshes present at the arrival of European settlers have been drained. In the current context, the overall impacts of urban and industrial development, the side effects of forestry and agricultural practices and of cottage developments, toxic chemicals, acid rain, and many other factors, all contribute to habitat modification, often to the detriment of wildlife.

Wildlife management now demands the cooperative efforts of all those interested in conservation: governments, conservation organizations, industry and private citizens. It also demands considerable integrated planning, time, ingenuity, and dollars. In 1986, Canada and the United States signed the first North American Waterfowl Management Plan (NAWMP). The plan sets the framework for continental waterfowl management for the next 15 years. Populations requiring priority attention are identified, and include the Black Duck in eastern North America. Specific remedies are proposed, and new mechanisms are identified which will improve on existing ones. For much of North America, and for most species, habitat conservation is identified as the top priority. For some species, improved harvest management may be called for, and in other cases there may be little that managers can do to influence the situation. Specific investigations may be called for where managers don't understand what is governing population levels.

In 1987, the province announced a new Wildlife Policy for Nova Scotia. That policy encompasses more than 250 species of wildlife which are found in the province, including game and non-game species. The Wildlife Policy establishes the goals of the province with respect to wildlife, and sets out a blueprint for action. The Nova Scotia Waterfowl Management Plan addresses one element of the provincial game and non-game program. It builds on the broader framework of the North American WMP and provides strategies for the implementation of the Nova Scotia Wildlife Policy as it relates to wetlands and the waterfowl resources. Nova Scotia's management actions should be integrated with those of other jurisdictions in eastern Canada and the United States. The Nova Scotia WMP provides information on the waterfowl resource and its use on this broader scene (Fig. 1), to facilitate cooperative management.

The purpose of this document is to describe the existing situation with respect to waterfowl and their habitats, to establish goals and objectives, and to describe general strategies, programs and policies to achieve these objectives. The list of species requiring priority attention is expanded beyond those of "immediate international concern", which includes the Black Duck in eastern North America. This section of the plan uses the same time frame of 15 years as does the North American WMP. The Nova Scotia Waterfowl Management

Figure 1. The Atlantic Flyway, with the position of Nova Scotia within the system.

Plan is a public document and should act as a guide and reference for all who have an interest in the conservation of the natural resources of the province.

A supplementary document will be developed by the government and non-government agencies contributing to the implementation of the WMP. That document will specify activities which will be undertaken by the parties actively participating in the conservation and management of waterfowl and their habitats. It will be reviewed each year and updated as required.

Goals and Objectives

The goals of the Nova Scotia WMP are specifically adapted for waterfowl and wetlands from those of the Nova Scotia Wildlife Policy. These goals are:

- to maintain the current diversity of native waterfowl species in their natural habitats;
- to provide waterfowl use and enjoyment opportunities in a variety of forms for the benefit of Nova Scotians and their visitors;
- to maintain waterfowl populations at levels which
  - ensure their perpetuation, and are consistent with international goals,
  - provide acceptable levels of benefits, and
  - are compatible with other resource uses and community interests.

For most species the objective is to maintain populations at, or somewhat above, current levels.

For Black Ducks, an increase of 30 per cent in the continental population is called for in the North American WMP. To reach this objective, nesting populations will have to increase in Canada where over 90% of this species breeds. In Nova Scotia, Black Duck populations must be maintained at current levels, or enhanced if possible, in order to help meet this continental objective.

Duck and goose populations - general

Government agencies have been monitoring provincial waterfowl populations intermittently since the 1930s, and general patterns of occurrence and relative numbers are known. Regional systematic and continuing data sets are lacking, and thus trends and absolute abundance can not be estimated precisely. A waterfowl population budget (Erskine 1987), using a variety of data sources and inferences, provided estimates showing the order of magnitude of the populations, thus allowing comparisons of the Nova Scotia situation with those in other areas.

Estimated spring (breeding plus non-breeding) populations of waterfowl in Nova Scotia by species (from Erskine 1987) are compared to those in other Atlantic Provinces, and to the Atlantic Flyway as a whole, in Table 1. Flyway totals are adapted from U.S. Fish and Wildlife Service Mid-winter Inventory data. The most important species of waterfowl in terms of spring numbers are Black Ducks and Common Eiders (each approx. 30,000 birds), Blue-winged Teal and Ring-necked Ducks (each approx. 10,000 birds) and Green-winged Teal (approx. 7500 birds). Spring populations of other species for the most part number under 1000 birds.

Breeding populations tell only part of the story. Each spring and fall, local numbers swell as birds migrating to and from their nesting grounds in the north pause in the province. Some areas along the shores of Nova Scotia also harbour over-wintering populations of Black Ducks, diving ducks and geese, and sea ducks are present year-round. It is from the fall and winter populations of waterfowl that the harvest is taken.

The groupings of ducks used in the North American WMP require modification in the Atlantic Provinces, where the coastal habitats frequented by diving ducks are more important than in other provinces. An appropriate segregation here is as "inland ducks" (dabbling ducks plus Ring-necked Duck, Common Goldeneye, and Common and Hooded Merganser), and "sea ducks" (eiders, scoters, Oldsquaw, Harlequin Duck, and Red-breasted Merganser). The scaups and Bufflehead, which are present only during the migrations and in winter, occur mainly on coastal waters.

INLAND DUCKS

The inland ducks are the most abundant and widespread group in Nova Scotia and the most important ducks to the majority of hunters. The Black Duck, Green-winged and Blue-winged Teals and Ring-necked Duck are the major species, comprising over 90% of all breeding inland ducks in the province. Some formerly "western" species are gradually increasing in the province, mostly on the fertile intensively managed marshes in agricultural areas. These include Pintail and Wigeon, with a few pairs of Shoveler, Gadwall, Redhead, and Ruddy Duck. The first breeding records for nine aquatic bird species occurred on marshes developed by Ducks Unlimited.

Although anecdotal information

Table 1. Estimated spring populations (individuals, including breeders and non-breeders) of waterfowl in Atlantic Provinces (adapted from Erskine, 1987), with comparisons to Atlantic Flyway (adjusted from Midwinter Waterfowl Inventory, mean of 1975-84).

Species	Spring Populations (individuals) N.S.	N.B.	P.E.I.	Nfld.	Labr.	N.S. as % of AR	N.S. as % of AF MWI* 75-84
Wood Duck	300	4200	100	-	-	6.5	0.3x
Green-winged Teal	7600	10400	1100	16500	45900	9.3	1.5
Black Duck	31900	49300	4700	37000	32800	20.5	2.9
Mallard	300+	1100	100	100	600	13.0	0.03
Pintail	600	1100	700	1100	2500	10.0	0.3
Blue-winged Teal	10100	12300	5600	300	-	35.7	4.0
American Wigeon	600	1100	1100	800	-	16.7	0.2
Ring-necked Duck	11500	15400	4800	15700	1400	23.6	2.8
Greater & Lesser Scaups	-	tr	tr	100	26900	0	0
Common & Barrow's Goldeneyes	700	10200	tr	15100	14700	1.7	1.1x
Common & Hooded Mergansers	700	1000	-	6000	7000	2.8	1.4
Red-breasted Merganser	600	800	400	10900	56000	0.8	0.4
Common & King Eiders	32000	28000	-	1200	55000	27.5	27.4x
Harlequin Duck	-	-	-	70	1800	0	0
Oldsquaw	-	-	-	-	1100	0	0
Surf & Black Scoters	-	-	-	-	24900	0	0
Canada Goose	300	100	300	18400	90400	0.3	0.03

* MWI adjusted for visibility thus: Wood Duck, Green-winged Teal, x 10 (in woods & shrubbery)
other dabblers, Ring-necked Duck, x 4 (in marshes)
divers and geese, x 1 (open water)
scoters & mergansers, x 3 (out to sea)
MWI adjusted for species wintering S of U.S.A., thus: Green-winged Teal, x 1.2;
Blue-winged Teal, x 5; Shoveler, x 1.2;
American Wigeon, x 1.2; Ring-necked Duck, x 2.5.
Mergansers were not segregated to species in MWI - here arbitrarily split 33% Common & Hooded, 67% Red-breasted.
(## wintering within AR deducted from total before calculation for Black Duck, all divers, Canada Goose.)

x estimate certainly too high (i.e. adjustments insufficeient to remedy incomplete coverage of MWI).
+ plus 2,000 feral or semi-wild.
Not listed in Table 1, but included in totals in text, are: (i) minor breeders - Gadwall, Shoveler, Redhead, Ruddy Duck; (ii) regular migrants or winterers - White-winged Scoter, Bufflehead, Brant; (iii) vagrants - Eurasian Wigeon, Snow Goose.

Table 2. Waterfowl population trends and goals for major species in the Maritime Provinces.

Major Species (-groups)	Maritimes Trend in Breeding Numbers	Maritimes Goals (year 2000)
Wood Duck	none evident	maintain numbers
Green-winged Teal	kill/effort declining	halt decline*
Black Duck	kill/effort increasing	increase numbers (as in NAWMP)*
Mallard	scarce, increasing	maintain numbers*
Pintail	none evident	maintain numbers
Blue-winged Teal	stable, variable	maintain numbers
American Wigeon	scarce. increasing	allow increase
Ring-necked Duck	kill/effort stable	maintain numbers
Common Goldeneye	kill/effort stable	maintain numbers
Mergansers	none evident	maintain numbers
Common Eider	stable	maintain numbers
Canada Goose	scarce, stable (migrants increasing)	allow increase

* As discussed in text.

exists from the 17th century onwards respecting N.S. waterfowl species, systematic attempts to quantify population trends began only in the 1930s. Most of the inland ducks in the Maritimes probably increased from then through the 1950s, as breeding of Ring-necked Ducks, Pintails, Wigeons and Mallards was first confirmed. Numbers stabilized in the last 20 years, except for the continued increase of Wood Ducks and of Mallards, and the influx of western species on managed impoundments. Wood Duck increases correspond with introductions and nest-box programs sponsored by Ducks Unlimited, Shubenacadie Wildlife Park and several local wildlife organizations. Generalized population trends of inland waterfowl in Nova Scotia are shown in Table 2, with the general objectives for each species.

According to the U.S.F.W.S. Mid-winter Inventory, the Black Duck has suffered a serious decline over the past 30 years in the central and lower continental U.S.. On the breeding grounds a decline has been evident in southern Ontario and south-western Quebec where Mallards have largely replaced the Black Duck. In Nova Scotia, and elsewhere in the Maritimes, the Mallard is still infrequent relative to the Black but its numbers are increasing gradually. Black Duck trend data for Nova Scotia are inconclusive, but do not suggest a decline in breeding birds paralleling the change in the Mid-Winter Inventory.

Any increase of the Mallard in Nova Scotia will probably influence the Black Duck. Most Mallards here to date occur as a result of releases; they centre on aviculturists who fail to confine their birds, and on provincial and city parks. Birds from these sites disperse to local agricultural areas to breed and some inter-breeding occurs with wild Black Ducks. Unless such Mallards are confined by aviculturists, the Black Duck may be replaced as a breeding bird in the agricultural areas of Nova Scotia. This situation poses concern to biologists. On the other hand, most of the public are happy to see Mallards - or any ducks - in their locale, and few hunters have a strong preference for one large duck over another. This creates a policy dilemma for wildlife management agencies, but the welfare of wild stocks must be one of their concerns. A policy has been adopted that semi-wild Mallards should be confined, to the degree possible, to avoid inter-breeding and excessive competition with Black Ducks. The relative abundance of Blacks and Mallards will continue to be monitored.

The North American WMP objective of 385,000 Black Ducks, as measured by the Mid-Winter Waterfowl Inventory, can only be reached if nesting populations and/or recruitment increase in Canada, where over 90% of the species' numbers breed. The degree to which Black Duck populations breeding in Nova Scotia move within other parts of the Flyway has been debated; as transient Black Ducks occur in Nova Scotia as well as local birds, population management here must cover both groups. The Black Duck Joint Venture on surveys and research, co-sponsored by the CWS and the USFWS, was developed to help devise a strategy to address the continental objective in this area. By 1990, a specific population objective for breeding Black Ducks will be established for Nova Scotia.

The North American WMP identifies the requirement for

independent means of verifying population trends. In 1983-89, breeding pair surveys for Black Ducks were undertaken throughout eastern Canada, as set out in the Black Duck Joint Venture. In Nova Scotia, breeding pair surveys will be continued to monitor trends in Black Duck abundance as part of the continental effort. These surveys are also proving useful for monitoring some other waterfowl, but they are not equally effective for all other species.

Black Duck brood production surveys have also been conducted periodically in Nova Scotia. Over 1000 wetlands have been sampled by the provincial Wildlife Division; data for one study unit are displayed in Table 3. Brood surveys help to predict the fall flight by providing an index to reproductive success of the birds. Geographic and temporal trends in reproductive success can prove informative for waterfowl management. Standardized brood production surveys will be implemented in Nova Scotia once continuing funding can be secured through the Black Duck Joint Venture. Significant correlations have been shown between weather factors and Black Duck production observed on study areas during the following summer, winter weather factors and Black Duck harvest and hunter success, and Black Duck production and Black Duck harvest in Nova Scotia. Lands and Forests models will be used to predict Black Duck fall flights from Nova Scotia.

A varying number of Black Ducks over-winter along the shores of Nova Scotia. Estimates of Black Duck winter populations on a study area in Halifax County are shown in Table 4. No long-term trend in numbers is apparent. As the number of overwintering ducks is positively correlated with December temperatures, winter surveys are not ideal for monitoring trends in local abundance of the species. However, they are useful for other purposes including as an adjunct to the USFWS winter inventory. Mid-winter surveys for Black Ducks will be undertaken in Nova Scotia as an element of the Black Duck Joint Venture.

Some concern has been expressed that corn and bread fed to Black Ducks wintering in urban areas provide an inadequate diet, which may lead to reduced winter survival and reduced reproductive success during the following season. Also winter feeding tends to improve the competitive advantage of Mallards relative to Black Ducks, which runs against present policy in this area. Feeding of wild ducks in fall and winter will be discouraged by governments, except during periods when extreme weather conditions threaten survival of birds. Research to evaluate impacts of winter feeding programs on the condition of the birds and on reproductive success will be encouraged.

In developing a continental harvest strategy for Black Ducks, waterfowl managers have to assess carefully the population status and harvest levels, and make estimates as to the impact of hunting relative to other factors in regulating the population. Nova Scotia waterfowl harvest estimates are shown in Table 5. Harvest surveys also provide a second index to abundance as they provide a measure of take per unit effort. Surveys of hunter activity and success will be maintained, and upgraded where possible, in order to obtain reliable estimates of harvest levels of all species of waterfowl.

For many years, wildlife

Table 3. Summary of Black Duck brood records, from helicopter and ground surveys, Halifax study unit, 1976-88 (no surveys in 1983).

Survey area	Broods recorded in year												Mean no. broods
	1976	1977	1978	1979	1980	1981	1982a/	1984b/	1985bc/	1986b/	1987	1988	
Cole Harbour	0	2	1	1	0	2	n.s.	2	3	5	5	0	2.6
West Lawrencetown	6	7	8	6	6	7	5	8	11	9	18	19	9.2
Lawrencetown Lake	5	6	6	5	9	7	3	4	2	4	6	5	5.2
Three Fathom Hbr.	4	3	5	7	6	4	3	3d/	5	3	5	4	4.3
Leslie Potholes, Gaetz Lake & Head	4	5	2	4	3	2	1	5	0	3e/	3	0	2.8
Grand Desert	0	0	0	0	0	0	n.s.	1	2	2	2	0	0.6
Chezzetcook	n.s.	9	5	9	8	7	9	9	2	6	8	7	7.2
Petpeswick (West, Long Cove & Head)	n.s.	4	3	0	2	0d/	n.s.	1e/	3	1e/	1	3	2.0
Martinique Beach	n.s.	4	1	5	4	1d/	n.s.	n.s.	1	n.s.	1	2	1.4
Totals f/	(32.7)	40	31	37	46	30	(37.3)	(36.9)	29c/	(36.9)	49	40	

n.s. = no survey.
a/ Ground surveys only.
b/ Helicopter surveys only.
c/ Survey late (19 July); estimate 5+ broods already flying were missed.
d/ Sub-standard conditions (too windy).
e/ Not all sub-areas surveyed.
f/ Including estimated values for years when no survey made in an area, to allow assessment of trend.

Table 4. Mid-winter estimated Black Duck populations, Halifax study unit, 1968-88 (no survey in 1984).

Year	Survey date	Black Duck population
1968	30 Jan.	1600
1969	31 Jan.	4100
1970	23 Jan.	2200
1971	19 Jan.	1900
1972	11 Jan.	1375
1973	16 Jan.	1700
1974	10 Jan.	2500
1975	28 Jan.	1000
1976	21 Jan.	800
1977	5 Jan.	1413
1978	1 Feb.	2750
1979	4 Jan.	2655
1980	3 Jan.	3428
1981	30 Jan.	1370
1982	20 Jan.	2651
1983	23 Jan.	3538
1984	n.s.	--
1985	25 Jan.	3264
1986	4 Feb.	1828
1987	21 Jan.	3171
1988	8 Feb.	2524

n.s. = no survey.

Table 5. Waterfowl harvest (mean of 1973-83, adapted from Erskine 1987), for Nova Scotia, with comparisons to Atlantic Provinces and Atlantic Flyway totals.

Species	Retrieved kill by province (rounded off to 100s) N.S.	N.B.	P.E.I.	Nfld.	Labr.	N.S. as % of AR total	N.S. as % of Flyway total
Wood Duck	500	2100	20	100	30	18.2	0.1
Green-winged Teal	12500	9700	6700	8600	1600	32.0	5.9
Black Duck	59100	25000	17900	15000	4000	48.8	12.5
Mallard	1800	1500	600	300	100	41.9	0.4
Pintail	900	1100	800	400	400	25.0	1.5
Blue-winged Teal	1600	5000	1100	500	50	19.4	1.4
American Wigeon	400	1600	300	100	40	16.4	0.5
Ring-necked Duck	2900	3800	500	3900	300	25.4	2.0
Greater & Lesser Scaups	700	700	60	300	1300	22.9	0.9
Common & Barrow's Goldeneyes	5300	4900	300	6100	3400	26.5	7.2
Bufflehead	2500	600	80	10	200	73.7	4.0
Hooded & Common Mergansers	2500	1400	100	2600	800	33.8	4.3
Red-breasted Merganser	2500	800	700	1900	1300	34.7	14.1
Common & King Eiders	9400	600	50	63800x	10700x	11.1	8.4
Harlequin Duck	50	0	0	100	100	tr	tr
Oldsquaw	3100	400	500	10200x	1500x	19.7	8.3
Black, Surf, and White-winged Scoters	9300	900	260	22000x	6600x	23.8	8.8
Canada Goose	8400	3800	13300	7200	3500	23.2	1.8

• (U.S.-Atl.Fl.) & AR + Quebec (not Ontario), mean of 1977-84 kill, not adjusted for crippling loss.

x The harvest of sea ducks in Nfld. & Labr. here covers only the period through early January, as in the other provinces; the total kill, particularly of eiders, is substantially larger, as the hunting season there extends until 10 March. The species composition shown differs greatly from general impressions, with too many scoters relative to eiders and Oldsquaws; there is no objective way of adjusting these figures at present.

agencies have been banding Black Ducks and other species as another means of monitoring and in attempts to answer important management questions. The data from these banding efforts have proved particularly useful in describing harvest patterns and dispersal of birds. Banding will continue to be used as a method of providing both management and research information.

The causes of the decline of the Black Duck through much of its range are not clear. The Mallard is strongly implicated. The Black Duck, a closely related form, may be succumbing to genetic swamping due to inter-breeding with Mallards, or it may be simply out-competed in an environment which has been markedly altered by Man. Some have argued that over-hunting has been and remains a factor, but the evidence is not conclusive. Research will attempt to ascertain the relative importance of factors implicated in the Black Duck decline, such as interaction with Mallards, habitat alteration, weather, acid rain and hunting mortality. A carefully co-ordinated research program is an important element of the Black Duck JV, and some of that research will be undertaken in Nova Scotia.

Accounts of the population characteristics of Nova Scotia Black Ducks are unpublished. Some data from banding stations near over-wintering areas for Blacks suggest that some birds are year-round residents and do not habitually move farther south for the winter. Research will attempt to confirm which elements of Nova Scotia Black Duck populations are resident and to examine the factors most affecting their population dynamics. Banding of locally raised Black Ducks will be pursued so as to differentiate between these and early migrants raised elsewhere.

In 1983, in response to concern that over-hunting may be contributing to the Black Duck's decline, special regulations were put in place in the U.S.A. for 5 years with the intent of reducing harvest pressure. Restrictions in Canada followed in 1984. Only slight restrictions were imposed in Atlantic Canada, where the evidence of a decline in Black Ducks has been weak. In 1989, wildlife management agencies of Canada and the United States re-evaluated the status of the Black Duck and the effect of the harvest restrictions which have been in place since 1983-84. A new 5-year harvest management strategy for Black Ducks in Nova Scotia was implemented beginning in 1989. It takes into account the status of the population, within the province and elsewhere, and the need for fair access to the resource by hunters within Nova Scotia and throughout the Flyway. In order to increase the local breeding population, restrictions on hunting of Black Ducks in Nova Scotia are imposed both at the start of the season - when primarily local birds are present - and during January - when the surviving birds have settled into wintering areas close to the breeding range.

There is no evidence of meaningful trends in numbers of the other dabbling or diving ducks here grouped under "inland ducks", either in Nova Scotia (Table 2) or on a continental scale. Their status, reproductive success, and harvest will be monitored using generalized surveys as described for Black Ducks. Special surveys and research projects will be implemented as required and as funds allow.

SEA DUCKS

The Common Eider is the most important sea duck in Nova Scotia. Approximately 8 thousand pairs of the dresseri race breed on islands along the eastern and southwestern shores of Nova Scotia. A second race, borealis, breeds farther north and winters south to Nova Scotia. Eider down is valuable commercially, and "cottage industries" exist on a small scale in eastern Quebec. Exploratory commercial down-harvesting was initiated in 1986 locally along the eastern shore of Nova Scotia.

The nesting range of the Common Eider in Nova Scotia is expanding, but population levels have not been assessed since 1982. Numbers of breeding eiders in Nova Scotia will be monitored periodically, using aerial surveys with ground-checking. The Great Black-backed Gull, which is expanding in numbers, may seriously affect reproductive success of the eiders in certain situations. The co-operative eider nesting structure program will be continued, and the impact of gull predation on eider reproduction will be assessed. Corrective measures, as provided for in the Atlantic Region Gull Management Plan (1989), may be required locally.

The principal food of the eider is the blue mussel. Recent aquaculture of these shellfish has increasingly come into conflict with eiders and other sea ducks. Although the extent of damage caused by eiders to the mussel industry is not fully understood, there certainly are local problems. Research will be undertaken to clarify the extent of eider predation at mussel farms, and to devise mitigation techniques. The policy will be to try to resolve the problems, rather than to issue permits to kill the offending birds.

With decreasing availability of Black Ducks, some harvest pressure in New England is swinging towards the sea ducks, principally eiders and scoters. Although current data indicate that N.S. eider populations are doing well, population models of the eastern North American eider population as a whole suggest that present harvest rates may be close to the level of sustainable yield. Critical review of recovery data from Nova Scotia-banded eiders will assist in development of management strategies. We know very little about the population dynamics of scoters anywhere. Harvest surveys will continue to monitor the legal take of eiders and scoters. Trends in numbers of other sea ducks wintering in the province will be tracked through regular winter waterfowl surveys.

The Harlequin Duck is a scarce winter resident off Nova Scotia coasts. Isolated groups occur in a few remote areas around offshore islands and headlands. The Harlequin likely was never common in Nova Scotia, but a downward trend is indicated by the Christmas Bird Count. No other systematically collected data are available to indicate trends. Although the bird is very tame, there is no evidence that hunting pressure in Nova Scotia since World War II has played a significant role in its present precarious status. Nonetheless, a conservative harvest strategy is called for here, as elsewhere. In Nova Scotia, the hunting season for Harlequin Ducks was closed, beginning in 1988, to ensure that legal hunting is not a factor

impeding the recovery of the species. A status report for the eastern population of the Harlequin Duck was prepared in 1989. Numbers of wintering Harlequin Ducks will be monitored by special surveys to assess the effectiveness of protection.

GEESE

Canada Geese occur in Nova Scotia primarily as migrants, breeding in Newfoundland, Labrador and northern Quebec. They winter south to North Carolina and form part of the large, poorly differentiated group known as the Atlantic population. Overall numbers in this population have increased over the last several decades. There are no firm conclusions about trends in the numbers of geese which migrate through Nova Scotia. Migrating Canada Geese occur mainly around the upper Bay of Fundy in spring, and along the Northumberland Strait in spring and fall. Some 5000-8000 Canada Geese overwinter locally along the south and east coasts. In recent years, there seem to have been important increases in the numbers of geese along Northumberland Strait in fall, as also in Prince Edward Island. It is unclear whether this reflects a change in abundance or in migratory patterns, or a local redistribution. Surveys will monitor populations of Canada Geese in Nova Scotia during fall migration. In conjunction with these surveys, banding and research projects will explore turnover rates and migratory routes.

A few hundred geese nest in the province, from introductions by wildlife agencies and descendents of escapees from parks and aviculturists. Some introduced breeding populations in other parts of North America and Europe have expanded rapidly, resulting in agricultural depredations and nuisance problems. These often led to difficult and expensive programs to control the introduced population. On the other hand, many people enjoy having Canada Geese as a feature of their neighbourhood. To date, problems with introduced Canada Geese in Nova Scotia have been relatively minor and localized. Government agencies will discourage further attempts to introduce Canada Geese as nesting birds in Nova Scotia.

The only other common visitor to Nova Scotia in the goose family is the Atlantic Brant. Brant pass northward through the Bay of Fundy and the western Gulf of St. Lawrence, but in numbers far fewer than prior to the eelgrass die-off of the 1930s. Very few pass through Nova Scotia in the fall in most years and they do not figure in the hunt. A few Snow Geese appear annually in Nova Scotia, often with Canada Geese, and they may be becoming more frequent.

A possible spectre on the horizon for geese in Nova Scotia is the threat of recurrence of eelgrass die-off, which devastated this principal food source in the 1930s, and one agent of which has recently been detected along the coast of Nova Scotia and New England. There is very little management agencies can do to abate its progress but the spread of eelgrass blight, and its effect on goose numbers and distribution, will be monitored.

Use and Value of Waterfowl

The real value of waterfowl to the people of Nova Scotia is not directly measurable. However, Nova Scotia would be a less attractive place if its waterfowl - or other wildlife - resources were depleted. The value of a resource is partly intrinsic, and partly related to use. The Migratory Birds Convention explicitly recognized the need to conserve species of birds that are useful, including waterfowl.

Under wise use and management, regulated hunting of waterfowl can continue without risk to future populations. Governments will attempt to provide maximum opportunities to hunters in Nova Scotia consistent with the concepts of sustainable use and international resource-sharing.

Estimates of the retrieved harvest of waterfowl are summarized in Table 5. The figures for Nova Scotia are compared with those for the other Atlantic Provinces, and for the Atlantic Flyway, to show the relative impact of the Nova Scotia hunting effort. For many species, Nova Scotia takes a relatively small proportion of the total harvest. Over the last decade the province accounted for about 12% of the Black Duck harvest, 7% each of the Green-winged Teals and Goldeneyes, and substantial proportions of the harvest of various seaduck species in the Atlantic Flyway.

Regulation of harvest is one of the main tools of waterfowl managers. Regulations are set based on the level of harvest which is believed to be sustainable. In estimating total take from a population, waterfowl managers routinely adjust the legal reported harvest to allow for crippling losses and poaching. In Nova Scotia, as in most areas, estimates of losses other than legal harvest are based on weak data sets, yet these factors may have an important impact on the population balance. Efforts will be continued to improve estimates of mortality to ensure that harvest is kept within sustainable levels.

Because waterfowl are migratory, harvest regulations in Nova Scotia must be co-ordinated with those in other jurisdictions. They must attempt to restrict illegal activity while not unnecessarily impeding the legal user. Regulations obviously also constrain hunter activity and must therefore be tailored to hunter needs and attitudes as much as possible. In the mid-1970s government agencies conducted a hunter preference survey in Nova Scotia which provided a useful information base for the next decade of regulation setting. Hunter preference surveys will be repeated periodically to assess hunter perspectives related to harvest regulations. In addition, management agencies will continue to consider regulatory proposals forwarded by hunter and conservation groups.

Enforcement of hunting regulations is an essential element of waterfowl management and requires the co-ordinated actions of many agencies. The Canadian Wildlife Service is responsible for the co-ordination of enforcement activities, but the principal responsibility for enforcement rests with the RCMP. Provincial wildlife officers and federal fishery

officers also play important roles in enforcement. Additional support will be sought through agreements with other agencies with enforcement capabilities. Enforcement efforts will focus on areas where there are special conservation concerns and where repeated and serious breaches of the regulations are known to occur. A vigorous enforcement effort will be continued, and improved where possible, to minimize illegal hunting activity.

Productive wetlands prove attractive to moulting and migrating waterfowl as well as to nesting birds. On some sites, the concentrations of ducks during spring and fall are truly impressive. However, besides attracting ducks, some managed marshes have a parallel concentrating effect on hunters, bird watchers, and others seeking outdoor recreation, because ducks are abundant and access is easy. Most managed marshes in Nova Scotia have no special restrictions on access or use. In some areas, management agencies have become concerned that the unrestricted hunting regime has led to resource management problems and a decreased recreational experience. Experimental regulations were introduced at Wallace Bay National Wildlife Area to determine cost-effective ways of controlling the hunt in managed areas where hunter density is high, especially during the opening week of the season. Where warranted, special hunting regulations will be instituted on managed marshes to ensure responsible resource management and a "quality hunt" for participants.

The purpose of enforcement is to improve compliance. Solid enforcement is essential, but alone it is not enough. Public information and education must play key roles. The Nova Scotia Hunter Education Program will be enhanced when possible to provide a greater focus on natural resource conservation and the importance of safe and ethical hunting practices with reference to waterfowl. Public information initiatives aimed at increasing the participation of informants will be encouraged as well as programs aimed at decreasing the acceptance and social status of violators.

The survey of the value of wildlife to Canadians showed that over 80 per cent of Nova Scotians participated in wildlife-related activities. Non-hunters and hunters share an interest in maintaining a numerous and diverse waterfowl resource which is distributed so that access to it is relatively easy. Wetland programs will recognize the integrated use potential of publicly owned wetlands and will encourage the sharing of resources by users. Sanctuaries and Wildlife Management Areas will be maintained to sustain waterfowl populations and to provide use opportunities to all. From the use perspective, trespass is restricted during the colonial bird nesting period on Nova Scotia's Eastern Shore Wildlife Management Area and in Piping Plover nesting areas. Similarly, public use restrictions may be needed, during the critical nesting periods of all birds in designated areas. Restrictions of this kind call for additional enforcement.

Canadian society tends to value wildlife highly as part of our heritage and identity, but, regrettably, it treats wildlife as an unvalued or free good. A healthy wildlife resource has a hard cash value to Nova Scotians as well as its intrinsic values. In 1987, wildlife-related activities were

estimated to have contributed $106 million to the Nova Scotia economy. It is essential that the message of the 1987 study becomes commonly understood. Conservation organizations, both public and private, will be encouraged to promote widely information showing the economic values of wildlife. A survey on the value of wildlife to Canadians will be repeated periodically, beginning in 1988.

Although the value of waterfowl to Nova Scotians is substantial, problems, usually of a local nature, can arise with particular species on occasion. For example, Canada Geese are sometimes a nuisance to farmers and others, and eiders may depredate cultured mussels. The CWS will contribute to research into methods of controlling nuisance waterfowl and will provide advice to citizens on how problems can be mitigated. The introduction of species which may cause problems to resident species or to people will be discouraged.

Habitat

Endangered habitats result in endangered species. Habitat is the single most important factor in sustaining population levels for all species in the province. The continued presence of waterfowl, and continued opportunities for optimized use and enjoyment, depend upon the maintenance and/or development of suitable habitats accessible to people. If habitats are destroyed or otherwise degraded, the waterfowl that depend on those habitats will also decrease. Alternatively, improving habitats can pave the way to a more abundant and diverse waterfowl community. Because waterfowl are migratory, habitat quality and quantity in other Atlantic provinces and states are also critical to the well-being of this shared resource. Thus, the principal focus of the North American WMP is on international habitat conservation efforts.

The NAWMP specifies that habitat quality and availability is the key to waterfowl abundance, and attributes recent declines observed in many North American species to the degradation and disappearance of the wetlands where they live. This is particularly obvious in the Prairies, where a major habitat initiative is proposed, and it is also pertinent in Nova Scotia.

Habitat objectives identified in the NAWMP are being implemented within the framework of the Eastern Habitat Joint Venture (EHJV). Sponsors of this program include the federal governments of Canada and the United States, provinces of eastern and central Canada, eastern states, Ducks Unlimited (both Canadian and U.S. arms), and Wildlife Habitat Canada. The scope of the joint venture is still emerging at this time. It is expected that it will accelerate securement, creation, and management of marshes, and positively influence wetland ecosystem health. The first project of the EHJV in Nova Scotia was launched in 1988.

Currently there are many development pressures which can lead to the degradation of important wetlands. Many such developments

depend on federal or provincial funds. In Nova Scotia, provincial policies for the conservation of wildlife habitat have been developed, and an inter-agency habitat advisory committee fosters the integration of wildlife needs into the management of natural resources by public and private agencies. Wildlife agencies of the federal and Nova Scotia governments will continue to explore the feasibility of developing an agreement to ensure that government funds do not sponsor degradation of designated wetlands.

INVENTORY

There are several sources of wetland inventory data for Nova Scotia. The Canada Land Inventory (Waterfowl) was completed by the Canadian Wildlife Service in 1968. It rated areas very broadly, according to their potential value for waterfowl if managed for that purpose. More recently, a jointly sponsored (federal-provincial) wetland inventory was published by the Canadian Wildlife Service as the "Wetlands Atlas for Nova Scotia". This rated the ecological values, given current patterns of use, of all wetlands of greater than 1/4 hectare; it is intended as a guide for land-use planning. Subsequently, the Nova Scotia Department of Lands and Forests incorporated some of these data and produced "Important Freshwater Wetlands and Coastal Habitats of Nova Scotia", primarily for provincial planning purposes; this supplemented ecological diversity with other wetland and wildlife species considerations. Both these recent inventories are useful, but they will need to be adapted to form the basis for federal-provincial designation agreements. Research will be undertaken to modify the ratings of Nova Scotia wetlands so that their comparative value for waterfowl production and use will be more evident.

The atlases described above established a useful wetlands baseline for Nova Scotia. However, Man's activities are constantly altering wetlands, both positively and negatively, and a cost-effective habitat monitoring process is essential in order to relate populations to habitat and plan effectively for the future. The most practicable approach for such monitoring is through the use of satellite imagery. Ducks Unlimited is developing such a wetland inventory tool for the Prairie region. The feasibility of adapting satellite-based wetland monitoring methodology to Nova Scotia will be explored.

BREEDING HABITAT

Waterfowl traditionally bred on natural wetlands throughout Nova Scotia. Subsequently, much breeding habitat was lost to development or degradation. Pressures were greatest on the larger wetlands and those on fertile soils or near to human settlements. Reproduction on remote, low-density infertile sites remains low. Efforts to increase the numbers and availability of waterfowl in accessible areas through management thus have focussed on the development of managed marshes, particularly through dyking and impoundment.

Ducks Unlimited has been the leader in developing new waterfowl production habitat across the country. In Nova Scotia, DU has co-operatively developed 125 wetlands

comprising 7,421 ha (18,337 acres), on federal (747 ha = 1,846 ac), provincial (5,004 ha = 12,365 ac), and private lands 2(1,670 ha = 4,127 ac). These marshes produce thousands of waterfowl annually, as well as many other birds and other wildlife. Most of the money ($8 million-plus) spent in Nova Scotia by DU since 1965 originated from contributors in the United States, but since 1981 DU also has raised money in Nova Scotia. In 1987 more than $300,000 was contributed, and public participation is increasing annually. There is keen interest and willingness among waterfowl users, both hunter and non-hunter, in Nova Scotia to contribute to worthwhile habitat management projects. The shared interest and participation of non-government agencies in habitat conservation efforts will be encouraged in Nova Scotia.

In 1985 the Nova Scotia government signed 5-year wetland development agreements with DU and Wildlife Habitat Canada valued at $3.6 million and $2.0 million, respectively. These agreements focus on the procurement and development of major marsh complexes which will provide recreational and educational opportunities. New expanded agreements will be developed as part of the Eastern Habitat Joint Venture.

Many managed marshes are not yet realizing their potential value to waterfowl, or to people. Management plans have been developed for each area, but to date securement has taken priority over intensive marsh management, both by government agencies and DU. Many large sites suitable for management have already been investigated regarding securement and development. Efforts to improve productivity of controlled marshes through intensive management are expected to increase in the future. The development of management techniques through research will allow more intensive management of smaller wetlands on floodplains and in agricultural areas. Similar approaches may also be applied to coastal marshes. A co-operative study involving Acadia University, Ducks Unlimited and N.S. Lands and Forests will assess the impact of coastal marsh management techniques on the ecological balance of coastal marshes. The results of this research will form the basis for making management decisions.

The Canada Land Inventory recognized fertility as an important factor limiting waterfowl production in much of Nova Scotia. One major part of the research to improve the wetland rating system will focus on basic nutrients such as nitrates and phosphorus. Co-operative research projects conducted under Nova Scotia/Ducks Unlimited agreements since 1980 have examined the use of commercial fertilizers for improving biological productivity, thereby enhancing the diversity and abundance of wildlife in wetlands. The results to date show sufficient promise to justify a more rigorous research effort. If the benefits of such management outweigh the costs in socio-economic terms, this technique may have applications elsewhere in Atlantic Canada. A co-operative effort will explore further the potential of nutrient enrichment for enhancing productivity of wetland ecosystems.

The creation of managed marshes on fertile soils, and other land use practices, attract species of birds that historically did not breed in the province. Bird watchers and to a lesser extent hunters welcome these additions to

provincial birdlife. However, when new species are introduced or attracted to an area, there may be side-effects on endemic species. The decline of the Black Duck throughout much of eastern North America in the face of an increase in the Mallard is a classic example of a change in a bird community apparently in response to changes in landforms due to agriculture. As with any land use change, it is doubtful that high primary productivity - and the accompanying diversity of wildlife species - can be encouraged without affecting some endemic species either positively or negatively. Research into marsh management for diversity and abundance of breeding wildlife will be supported and encouraged.

MIGRATING AND WINTERING HABITAT

Most areas used by concentrations of migrating and wintering waterfowl in Nova Scotia are in the coastal zone, including dyked lands. The North American WMP calls for protection of an additional 4,000 ha (10,000 acres) of migration and wintering habitat for Black Ducks in Atlantic Canada, as part of the efforts needed to improve the status of this species. Habitat objectives identified in the NAWMP are being implemented within the framework of the Eastern Habitat Joint Venture (EHJV). A salt marsh securement program will be instituted in Nova Scotia.

Acquisition is a costly way of securing waterfowl habitat, in the short term, and often it is not practical for a variety of reasons. It remains the most permanent and versatile means of wetland protection, when a requirement for sustaining a variety of public use opportunities is considered. Unlike the situation in more developed areas of Canada and the United States, acquisition of wetlands still is a realistic option in Nova Scotia. The federal government policy for acquiring wildlife lands (National Wildlife Areas) restricts consideration to those areas of outstanding national or regional importance to migratory birds. A proprietary interest in coastal as well as freshwater wetlands by private and public wildlife management agencies will be pursued when acquisition is a necessary and viable option.

Areas in Nova Scotia which are used by significant numbers of migrating or wintering waterfowl are listed in Table 6 and displayed in Figure 2. Because of their importance, special measures are required to ensure their continued value. Some of these sites warrant designation under the Convention on Wetlands of International Importance especially as Waterfowl Habitat (the Ramsar Convention), and are so indicated in Table 6. The Chignecto National Wildlife Area, Musquodoboit Harbour and the Southern Bight of Minas Basin have already been listed as Wetlands of International Importance. Federal and provincial wildlife agencies will continue to evaluate sites which are potential Wetlands of International Importance, and will propose their formal recognition when appropriate.

All of the sites listed in Table 6 warrant special conservation from a provincial perspective. Various approaches are possible, including acquisition and management by conservation agencies (public and private), special designations, land-use restrictions or incentives. In many cases no special additional protection is required. The

Table 6. Major waterfowl concentration areas, Nova Scotia, with approximate use by major species.

Location (length & width, approx.)	Species using (approx. no.)	Type of use
1. Amherst, Maccan, Cumberland Basin marshes * (25km x 10km)	Inland ducks (1000)	Breeding
	Inland ducks (2000)	Staging
	Canada Goose (3000)	Staging
2. Linden - Tatamagouche bays (60km x 10km)	Black Duck (2000)	Staging
	Canada Goose (5000+)	Staging
	Brant (1000)	Staging
3. Sydney - Mira Bay (40km x 20km)	Black Duck (600)	Staging, wintering
	Canada Goose (700)	Staging, wintering
4. Eastern Shore WMA and nearby islands (40km x 15km)	Common Eider (5000+)	Breeding
	Common Eider (10,000+)	Staging
	Harlequin Duck (50)	Wintering
5. Martinique - Cole Harbour * (30km x 10km)	Black Duck (3000)	Staging, wintering
	Canada Goose (4000)	Staging, wintering
6. Port Joli - Sable River * (30km x 10km)	Black Duck (1000)	Staging, wintering
	Common Eider (2000+)	Staging, wintering
	Harlequin Duck (50)	Wintering
	Canada Goose (3000)	Staging, wintering
7. Barrington Bay - Cape Sable Is. area (25km x 15km)	Black Duck (1000)	Staging, wintering
	Common Eider (3000)	Moulting, staging
	Harlequin Duck (50)	Wintering
8. Pubnico - Yarmouth saltmarshes (30km x 15km)	Black Duck (3000)	Staging, wintering
	Common Eider (2000)	Staging, wintering
	Canada Goose (2000)	Staging, wintering
9. St.Marys Bay - Annapolis Basin (40km x 15km)	Black Duck (1500)	Staging, wintering
	Common Eider (2000)	Staging, wintering
	Oldsquaw (2000)	Wintering
10. Southern Bight, Minas Basin * (30km x 10km)	Black Duck (3000)	Staging, wintering
	Canada Goose (2500)	Staging

* Part or all of area suggested, proposed, or designated as Ramsar site(s).

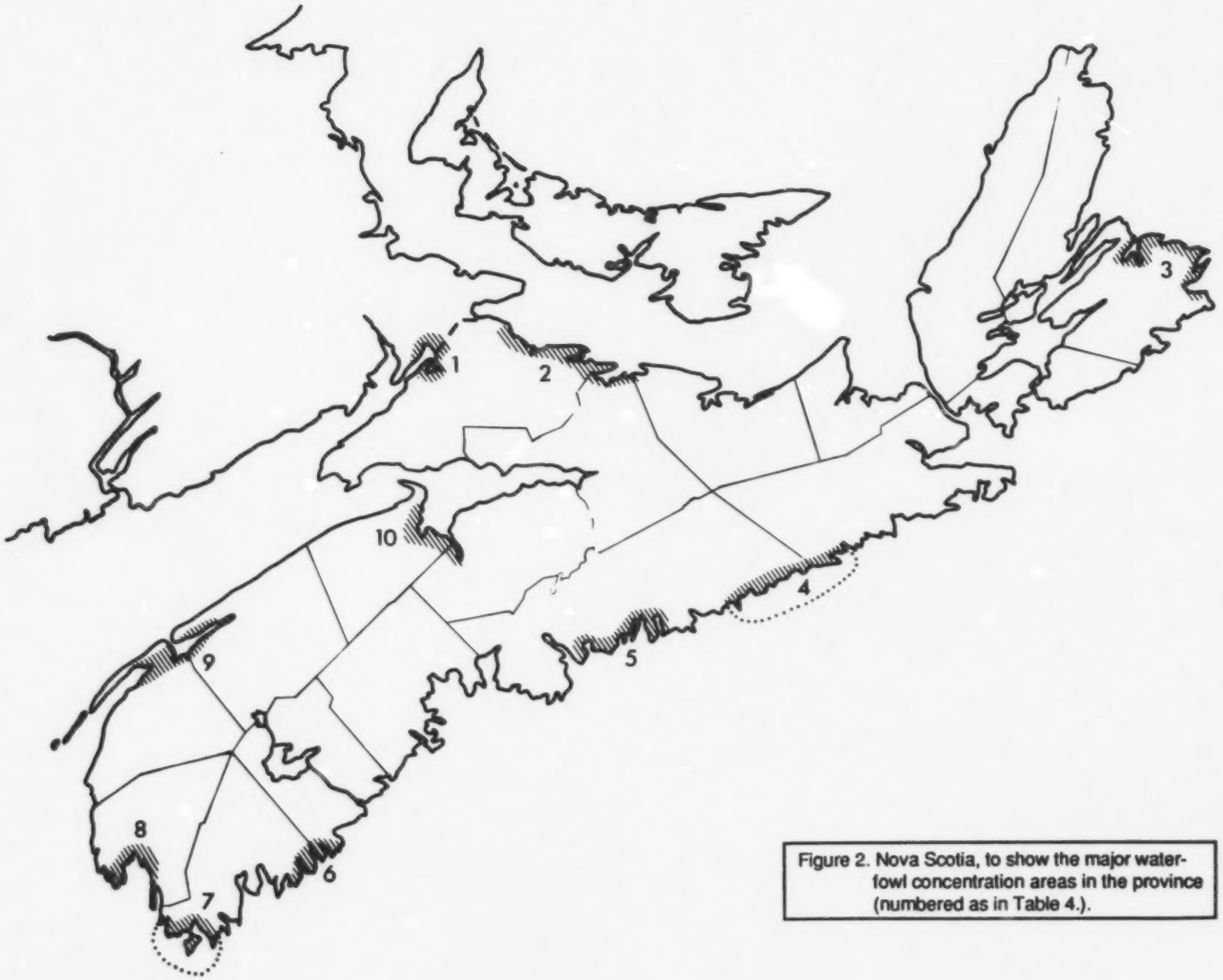

Figure 2. Nova Scotia, to show the major waterfowl concentration areas in the province (numbered as in Table 4.).

mechanisms chosen depend on a wide variety of factors including the nature and imminence of the threat, land ownership, and cost-effectiveness. Every effort will be made by public and private conservation organizations to ensure that sites identified as of great importance to the conservation of and continued use by waterfowl in Nova Scotia are not degraded.

Threats and Assessment

Because of the geological characteristics of much of Nova Scotia, and the province's geographical position relative to industrial North America, acid rain is a factor that may affect much waterfowl habitat here. The Nova Scotia Department of the Environment in co-operation with the Nova Scotia Department of Lands and Forests has reviewed several hundred Nova Scotia lakes in relation to LRTAP acidity. Research is being undertaken in the province by the CWS, as part of Canadian efforts to assess the importance of acid rain to waterfowl and to monitor its effects over time.

Many important economic development practices may have impacts on waterfowl. Through environmental impact assessment processes, federal and provincial wildlife agencies will advise on predicted effects of development proposals and suggest mitigative measures.

Direct threats to waterfowl, and to other wildlife, can arise from the use and disposal of toxic chemicals. Waterbirds are extremely susceptible to the effects of oil spills because exposure to minimum amounts of oil can lead to death. CWS and federal and provincial Environment departments will provide advice to others with respect to the registration, handling, and disposal of toxic substances. Research often is necessary to determine the potential impact of a particular chemical. Research will be undertaken, on a priority basis, to provide advice to regulatory agencies and industry on the potential hazards to waterfowl and their habitats of specific substances, including oil.

Concern is increasing throughout North America over the hazard posed to waterfowl by lead pellets introduced to wetland habitats through the hunting of these birds. Waterfowl ingest the pellets, which are abraded in their gizzards and result in lead poisoning. This has long been a recognized problem in areas of concentrated hunting. The U.S.F.W.S. has set in motion a process of eliminating the use of lead shot for waterfowl hunting in the United States by 1991. Recently it has been recognized that ducks may pick up the pellets, that can give rise to lead poisoning, at any stage of their annual cycle. Ingestion of lead may occur in low-density hunting areas in Canada, with the symptoms not developing until weeks later when the birds are south of the border. The incidence of lead pellets in gizzards, and of lead concentrations in the blood, will be investigated in areas of Nova Scotia where hunting is practiced as well as in bird sanctuaries. Lead shot restrictions may be implemented in areas where

concentrations of lead shot are believed to be damaging waterfowl populations or in other ways affecting environmental quality.

Serious outbreaks of contagious diseases, such as avian cholera and botulism, occur occasionally at staging areas where large numbers of migrating waterfowl concentrate. Avian botulism has recently caused serious mortality at Common Eider colonies in the Gulf of St. Lawrence. Although few instances of such epizootics have been recorded in Atlantic Canada, it is important to detect and respond to outbreaks as soon as they happen, and to be aware of conditions which favour these diseases. Field staff of government wildlife agencies will be trained to detect and report disease outbreaks, through agreements with the Atlantic Veterinary College in Charlottetown, P.E.I., and other veterinary colleges and agencies, which will co-ordinate the response to such incidents.

Conclusion

The Nova Scotia Waterfowl Management Plan has been prepared in order to chart a course for waterfowl conservation efforts over the next 15 years. It attempts to address all issues of importance to waterfowl in the province. It proposes solutions and specific actions, some of which we know to be controversial. This plan has been approved, and it forms the basis for planning annual activities by CWS-AR, Nova Scotia Wildlife Division, and co-operating non-government organizations.

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